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Report to the Federal Communications Commission on Carrier Efforts Toward Attaining Digital TTY Accessibility, and the Status of the Various Technological Solutions, as Provided by CC Docket No. 94-102, In the Matter of Revision of the Commission's Rules To Ensure Compatibility with Enhanced 911 Emergency Calling Systems

California RSA #3 Limited Partnership, A California Limited Partnership, d/b/a Golden State Cellular ("Golden State"), by its attorneys, pursuant to the Federal Communications Commission's ("Commission") *Fourth Report and Order* in CC Docket No. 94-102,^{1/} and the subsequent *Order* in the same proceeding,^{2/} hereby files a Quarterly Report for the quarter ending September 30, 2002, detailing its efforts towards attaining digital text telephone ("TTY") accessibility, and the status of the various technological solutions that will help it attain that goal.

In the *Fourth Report and Order* the Commission established December 31, 2001 as the new deadline for carriers operating digital wireless systems to have obtained all software upgrades and equipment necessary to make their systems capable of transmitting 911 calls from TTY devices. It further established June 30, 2002 as the deadline for carriers to integrate, test and deploy the technology in their systems in conjunction with the public safety community. In order to be assured that the aforementioned deadlines would be met without complication, the Commission required digital wireless carriers to submit Quarterly Reports fifteen days after the end of each quarter.^{3/} Golden State began offering digital CMRS wireless service during the fourth quarter of 2001, and has kept the Commission informed as to its progress in achieving TTY-compatibility on the digital portion of its network. In addition to Golden State keeping the Commission informed via the filing of Quarterly Reports, when implementation issues became obvious, Golden State filed for waiver of these

^{1/} In the Matter of Revision of the Commission's Rules To Ensure Compatibility with Enhanced 911 Emergency Calling Systems, *Fourth Report and Order*, CC Docket No. 94-102, 15 FCC Rcd 25216, 65 Fed. Reg. 82293 (December 28, 2000), ("*Fourth Report and Order*").

^{2/} In the Matter of Revision of the Commission's Rules To Ensure Compatibility with Enhanced 911 Emergency Calling Systems, *Order*, CC Docket No. 94-102, 17 FCC Rcd 12084, (rel. June 28, 2002) ("*Order*"). (granting Golden State waiver of 20.18(c) until December 31, 2002).

^{3/} See, *Fourth Report and Order* (December 28, 2000).

deadlines.^{4/} In its recently released *Order* in this proceeding, the Commission granted Golden State waiver of 20.18(c) until December 31, 2002, while requiring Golden State to continue to submit Quarterly Reports, until implementation.^{5/} Golden State now files this instant report with the Commission.

I. Carrier Background

Golden State provides analog and since October 5, 2001, digital CMRS wireless service in the California 3 RSA.^{6/}

II. Access to 911 Through TTY Devices

Golden State's system is now compliant with the Commission's digital TTY compatibility rules compliance date of Commission Rule 20.18(c), in advance of the December 31, 2002 deadline set by the Commission when it granted Golden State's waiver request. Specifically, during the third quarter of 2002, Golden State's infrastructure provider, Nortel Networks ("Nortel"), installed and enabled the same Nortel TTY feature for CDMA cellular infrastructure on the Golden State switch that Nortel had tested and approved on other carriers' switches prior to June 30, 2002.^{7/}

During the third quarter of 2002, before Nortel's deployment of TTY-compatible features on Golden State's digital network, Golden State contacted the Commission's Consumer & Governmental Affairs Bureau, to "help ensure that [Golden State's] subscribers are informed of its waiver until December 31, 2002."^{8/} Golden State contacted the Bureau per the Commission's suggestion made to all carriers receiving waivers, despite the fact that Golden State is not aware of any existing customer that uses a TTY device on its analog network or has expressed a desire to utilize such devices on either its analog or digital network. Additionally, Golden State was included on the Commission's list of carriers who

^{4/} See California RSA # 3 Limited Partnership, A California Limited Partnership, d/b/a Golden State Cellular Petition for Waiver of the Deadline Established in the *Fourth Report and Order*, CC Docket No. 94-102, FCC 00-436 (December 27, 2001) (requesting waiver of the December 31, 2001 deadline). See also, California RSA # 3 Limited Partnership, A California Limited Partnership, d/b/a Golden State Cellular Petition for Waiver of the June 30, 2002 Deadline Regarding TTY Access to Digital Wireless Systems, CC Docket No. 94-102, FCC 00-436 (June 10, 2002) (requesting waiver of the June 30, 2002 deadline).

^{5/} See *Order* (rel. June 28, 2002).

^{6/} Station KNKN240 (CMA338B).

^{7/} See *infra*, Nortel's CDMA TTY/TDD Regulatory FAQ/RFI (July 1, 2002).

^{8/} See, *Order*, at ¶ 25.

received waiver from 47 C.F.R. 20.18(c), posted on the Consumer & Governmental Affairs Bureau's website.^{2/}

On September 27, 2002, Nortel completed the installation of the MTX10 base-load and the TTY/911 feature software on Golden State's switch. Prior to that time, Golden State had requested that Nortel confirm the TTY 911 functionality of its equipment. Nortel's response is appended hereto as **Exhibit A**. Golden State is not capable of independently verifying the information presented therein, but has no reason to believe it is not accurate, particularly since the digital TTY compatibility requirement is a function of compatible network hardware and software and handsets. If a particular configuration works in one deployment for a particular vendor's infrastructure, it should work equally well in any other deployment. Since the requisite Nortel TTY equipment in Golden State's network is of the same type and standard as the TTY equipment Nortel tested and approved in other locations, Golden State believes its network is in compliance with Commission Rule 20.18(c). It is for these reasons that Golden State can report compliance of Commission Rule 20.18(c) before December 31, 2002. Accordingly, Golden State recently contacted the Consumer & Governmental Affairs Bureau to inform them that Nortel has advised that Golden State's CDMA digital network, as presently operating, meets the Commission's requirements for TTY compatibility.

While Golden State provides service to a number of brands of certified handsets owned by its subscribers and roamers entering its market, Golden State's primary handset providers are Motorola, Inc. ("Motorola"), Nokia and Audiovox. Golden State did not have access to any TTY-compatible CDMA handsets to enable it to commence testing during the third quarter of 2002. Nevertheless, Golden State had requested that Motorola, Nokia and Audiovox provide information on their progress in releasing commercially available TTY-compatible CDMA handsets. Motorola's response is appended hereto as **Exhibit B**. Golden State is not independently capable of verifying the information presented therein, but has no reason to believe it is not accurate. Golden State did not receive a response from Nokia or Audiovox during the third quarter, and therefore cannot report on their development activities for that quarter.

The appended information from Nortel and Motorola is respectfully submitted in response to these issues, as required in the Commission's *Fourth Report and Order* (rel. Dec 14, 2000), and its subsequent *Order* (rel. June 28, 2002.)

A. Development Activities

- (1) *Network Infrastructure Software Development*
- (2) *Handset Development and Testing Plans*
- (3) *Beta Testing and Lab Testing*

^{2/} See, <http://www.fcc.gov/cgb/dro/e911tty.html> (last visited September 30, 2002).

- (4) *Release and General Availability to Carriers of Network Infrastructure Software*
- (5) *Availability to Carriers of Full Acceptance Test Units*
- (6) *Efforts Toward Achieving Digital Wireless Solution Compatibility With Enhanced TTY Devices*

Golden State has been advised that its digital network, as presently operating, meets the FCC's requirements for TTY compatibility.

B. Testing and Deployment Activities

Golden State did not have access to TTY-compliant CDMA handsets during the third quarter of 2002. With regard to item number 7 however, Golden State recently communicated with the California 911 Emergency Communications Office and the California Highway Patrol, the designated Public Safety Answering Point ("PSAP") for all wireless carriers in California, to advise them that Golden State's digital network supports TTY calls made using a TTY-compatible CDMA handset. Golden State is not responsible for, nor has any control over, the public safety community obtaining digital TTY-compatible equipment. Nonetheless, during the second quarter of 2002, while Golden State's TTY-compatible upgrade was pending, Golden State made the PSAP aware that the TTY Forum (through ATIS) offers a diagnostic test to PSAPs to determine if the PSAP's equipment is digital TTY-compatible.^{10/} This information remains relevant.^{11/} With respect to item number 8, Nortel has successfully conducted all necessary testing of Golden State's switch, to the extent that the switch and requisite software is of the same type and standard as the TTY functionality that Nortel tested and approved prior to June 30, 2002 (see **Exhibit A**.) With respect to item 9, Golden State requested information from Motorola, Nokia and Audiovox; Motorola's response is set forth in **Exhibit B**. With respect to item 10, TTY compatibility is available throughout all portions of the Golden State network where digital CDMA has been deployed.

- (7) *Carrier Coordination of Testing With PSAP*
- (8) *Carrier Testing Activities, Including Field Testing, Consumer End-to-end Testing, and Other Necessary Tests*
- (9) *Retail Availability of Necessary Consumer Equipment*
- (10) *Geographic Scope of Network Infrastructure Deployment*

III. Conclusion

During the third quarter of 2002, Nortel deployed the Nortel MTX10 software and TTY-compatibility CDMA feature software on Golden State's TTY-capable switch. Based

^{10/} The diagnostic test can be found on the Alliance for Telecommunications Industry Solutions ("ATIS") webpage, www.atis.org, at TWIP (TTY Wireless Inter-Operability with PSAP TTY) Test, (visited on July 8, 2002).

^{11/} *Id.*, (last visited on September 8, 2002).

on this installation, Golden State is now in compliance with Commission Rule 20.18(c) before December 31, 2002, the revised deadline pursuant to Commission grant of Golden State's waiver request, to make its digital network capable of transmitting 911 calls from TTY devices. Accordingly, no further quarterly reports will be filed by Golden State.

Respectfully Submitted,

California RSA #3 Limited Partnership, A
California Limited Partnership,
d/b/a Golden State Cellular

Dated: October 10, 2002

/s/ Anna E. Ward

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EXHIBIT A

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CDMA TTY/TDD Regulatory FAQ/RFI

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Enclosed is information regarding Nortel Networks status to deliver TTY solutions to market in support of CDMA service providers' ability to meet FCC TTY milestone objectives.

- What is the status of TTY/TDD network infrastructure **software/hardware development and testing**?

Nortel Networks response: Regarding the MTX10/NBSS10.x release, Nortel Networks has completed development, product test and verification. Nortel Networks has completed internal testing using prototype and more recently using commercial mobile handsets with TTY capabilities from a few vendors, which have all shown positive results. Nortel Networks does not anticipate performance issues with any other vendor's handsets once they become available provided they are based on published standards. Nortel Networks has also performed tests with a leading manufacturer of TTY/TDD (Teletypewriter /Terminal for Deaf Device) PSAP (Public Service Answering Point) equipment to ensure interoperability. Results of that specific testing were found to be positive*. This completed TTY/TDD solution is based on standards: IS-127-2 (EVRC) & IS 733-1 (13K Vocoder). Operators will be able to deploy the Nortel Networks TTY solution based on these original standards IS-733-1, IS127-2 to meet the FCC deadline for implementation.

New revisions of these standards namely IS-127-3 (EVRC TTY) & IS-733-2 (13K TTY) have been published as of September 2001. Nortel Networks plans to support this new addendum to the standards in our next scheduled software release, MTX11/NBSS11, which is scheduled to be generally available (GA) Q4 2002. Product testing for this newer, more robust TTY/TDD software based on the revised CDMA standards is currently underway. The latest test results have shown, under a variety of test conditions, that the TCER (Total Character Error Rate) is less than a percent. These positive results have been repeatable when interoperating with mobile terminals with TTY capabilities from a variety of different vendors who could make their test phones available to Nortel Networks during the testing of this TTY enhancement. Nortel Networks did conclude during interoperability that a few mobile terminals were attributing to a higher than usual TCER due to TTY algorithms internal to those handsets being less than the most current version at the time of testing. These vendors have taken steps to update their mobiles to the latest code; therefore Nortel Networks foresees no issues with interoperability with those mobile terminals in the future.

- For TTY/TDD what are the plans to work with any wireless carrier to perform **end-to-end customer tests**, and when will this occur?

Nortel Networks response: The verification process for MTX10/NBSS 10.1.2 version of the TTY/TDD functionality with Nortel Networks lead customers was completed as of January 2002. The Nortel Networks TTY/TDD solution showed TCER of less than 1% in most cases and marginally exceeded 1% TCER in only the most strenuous RF and TTY/TDD test conditions*. Nortel Networks used several different TTY mobile terminals during these test activities. Please note the 1% TCER is not part of the FCC mandate.

A more robust version of the TTY/TDD functionality based on the revised CDMA standards is to be delivered within the MTX11/NBSS11.0 software release, which begins end-to-end lead customer validation testing later this summer.

Operators are encouraged to request their handset vendors to test their commercial-grade CDMA TTY capable handsets in Nortel Networks Wireless Interoperability Test Lab.

***Nortel Networks acknowledges that the positive results of the TTY/TDD software feature is a direct function of the TTY/TDD equipment available to Nortel Networks and their lead customer verification partners at the time of TTY/TDD development, testing, and full network verification. Also note that some of the commercially deployed PSAP**

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equipment, consumer TTY/TDD devices, and TTY/TDD capable digital mobile terminals will not comply with the same published standards from which Nortel Networks TTY/TDD solution was developed and tested. This reality will impact wireless operators who strive to deliver the best quality solution. Some operator effort will be required to procure the proper permutation of TTY/TDD equipment to inter-work with Nortel Networks TTY/TDD infrastructure software.

- What is the Network infrastructure software/hardware **planned general availability dates** that support the deployment of this regulatory feature?

Nortel response: In order that wireless network operators may comply with the FCC's June 30, 2002 requirement for TTY/TDD implementation, Nortel Networks has made TTY/TDD enabling software available as follows:

Software load	CDMA SW general availability
MTX10/ NBSS10.x	Now Available (January 2002)

- What are the **hardware baseline and software baseline** to support CDMA TTY/TDD functionality?

Nortel Networks response:

Regulatory solution required	CDMA HW/SW baseline
TTY/TDD	NBSS10.x SW (BSS)** TTY capable handsets (3 rd party)

****Note:** NBSS10.x will operate with MTX09 software, however this configuration will only be supported for 30 days. NBSS software is only fully supported on the previous MTX software version as a step to upgrading to the most current MTX version. I.E. All customers require MTX10 software to not only maintain a supported NBSS10.x load, but to also enable the regulatory feature set contained in MTX10 e.g. CALEA, LNP, E911 phase 2.

Please also note that the MSC itself must meet certain hardware requirements in order to upgrade to the MTX10 version of software e.g. processor speeds, memory size. These requirements were communicated to customers in the year 2000. Nortel Networks customer account team personnel churn related to Nortel Networks 2001 downsizing activities impacted some smaller customers. In these instances communication did not occur until Q2 2001.

- What is the **schedule for deployment** of the software/hardware in the network?

Nortel Networks response: The minimum baseline software requirements for this functionality are given above. For questions related to scheduling its deployment into an operator's network, please contact Nortel Networks Product Deployment. The majority of Nortel Networks U.S. CDMA customers (>75%) has already upgraded to MTX10/NBSS10.x software and is therefore TTY/TDD ready. Most of the *remaining* CDMA customers are currently showing plans for MTX10/NBSS10 upgrade after June 30, 2002. Many of these smaller customers that have yet to upgrade have significant hardware prerequisites to procure prior to being able to upgrade their MTX and BSC baseline software version. Many of these same operators have scheduled MTX10/NBSS10.x release for later this year, which is when these mitigating baseline issues delaying switch readiness are closed. There are a relatively small number of rural cellular customers that from whom Nortel Networks has not received confirmation of their upgrade plans.

Nortel Networks recommends that all customers who have not yet ordered and scheduled upgrade MTX10/NBSS10.x to please contact Nortel Networks to ensure the most expeditious network upgrade.

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- What are Nortel Networks **plans to test their own or other vendor handsets** with your switch solution?

Nortel Networks response: Nortel Networks provides only infrastructure for wireless networks. Nortel Networks does not provide mobile handsets. Nortel Networks recommends that the operator engage its handset vendor(s) in order to respond to the FCC regarding handset availability and interoperability test results with Nortel Networks infrastructure.

Operators are encouraged to request their handset vendors to test their commercial grade CDMA TTY capable handsets in Nortel Networks Wireless Interoperability Test Lab.

Please contact Cher Bruce for scheduling TTY testing in the Nortel Networks Wireless Interoperability Test Lab, where testing is based on current published standards (Phone: 972-684-2299; Fax: 972-684-3881; csbruce@nortelnetworks.com)

- **Contacts:**

Product Marketing	MTX10/NBSS10.xSW	Kurt Raaflaub	(972) 685-2971
Product Management	CDMA TTY/TTD	Maniam P	(972) 685-2971
Regulatory	E911 Ph2&TTY/TDD	Charles Spann	(903) 852-6798
Product Deployment	CDMA NBSS SW	Mark Schwarzer	(972) 685-5851

EXHIBIT B

MOTOROLA
TTY COMPATIBILITY DEVELOPMENT STATUS REPORT
2nd Quarter 2002

Product	Standard	Status	Milestones	Progress
CDMA Handset	IS 127-3 IS 733-2	Carrier deployment	IOT: June 2001 UI: October 2001 ROM: December 2001 SA: May 2002	Handset development work complete. V60i and V120c CDMA phones have been approved for shipment.
GSM Handset	TS 26.226 TS 26.230 TR 26.231	Carrier deployment	UI: October 2001 IOT: October 2001 ROM: January 2002 SA: July 2002	Handset development work complete. V60i GSM phone has been approved for shipment. P280i expected to be approved for shipment in July
iDEN Handset		Carrier deployment	Production handsets available to carriers.	Handset work complete.
TDMA Handset	IS 823-A IS 840-A	Carrier deployment	IOT: September 2001 UI: September 2001 ROM: October 2001 SA: April 2002	Handset development work complete. V60i and V120t TDMA phone has been approved for shipment.
CDMA Infrastructure	IS 127-3 IS 733-2	Carrier deployment	FOA Jan 02 Software release available	Carrier testing complete.
iDEN Infrastructure		Carrier deployment	Production software available to carriers	Infrastructure software available for carrier deployment.

Note: Motorola works with its carrier customers to provide them specific information related to their respective products.

Note: IOT is Inter Op Testing with RAM based parts for Character Error Rate testing
UI is User Interface testing with HCO / VCO support
ROM is the availability of ROM based phones. These should be functionally identical to a RAM phone.
SA is Ship Acceptance of production volume quantities

Rex Ellington
Product Safety & Compliance
Motorola – Personal Communications Sector
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CERTIFICATE OF SERVICE

I, Ruth E. Garavalia, a secretary with the law firm of Kurtis & Associates, P.C., do hereby certify that I have this 10th day of October 2002, filed the foregoing “REPORT TO THE FEDERAL COMMUNICATIONS COMMISSION ON CARRIER EFFORTS TOWARD ATTAINING DIGITAL TTY ACCESSIBILITY, AND THE STATUS OF THE VARIOUS TECHNOLOGICAL SOLUTIONS, AS PROVIDED BY CC DOCKET NO. 94-102, IN THE MATTER OF REVISION OF THE COMMISSION’S RULES TO ENSURE COMPATIBILITY WITH ENHANCED 911 EMERGENCY CALLING SYSTEMS” electronically with the Federal Communications Commission’s Electronic Comment Filing System. I have also filed a copy of this report with the Federal Communications Commission’s copy contractor, Qualex International. In addition, a copy of this report has been provided to Melinda Littell of the Commission’s Wireless Telecommunications Bureau.

/s/ Ruth E. Garavalia
Ruth E. Garavalia